Park Ridge Primary School

school-building

advanced skylight system

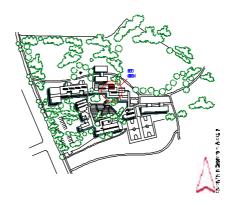
building

The Park Ridge Primary School is a public school designed for a maximum of 700 students. It consists of nine classrooms, several specialty spaces, and 14 additional, movable classrooms. It was first occupied in February 1991. The use of passive solar strategies is an integral part of the school's overall design. On the eastern and western ends of the buildings the amount of windows is reduced to a minimum. Shaded glass is employed throughout the building. To balance the need for a consistant temperature during the summer and the necessity to effectively heat up the buildings in the winter, the materials had to be able to provide heat storage capacities. The windows as well as specially made steel mesh shades are placed such as to control glare and to prevent direct sunlight from entering the classrooms.

daylight strategy

In order to establish the lighting levels. basic research was conducted on 1:20 scale models, that examined various design options. These studies showed, that on overcast days, sidelighting would not deliver sufficient light levels to the center of the classrooms. Consideration of various other alternatives led to the development of a central barrel vault skylight with an interior deflector, that would provide adequate light in the classrooms under most conditions. Consequently the final design shows 0,8 m wide skylights running the full length of the apex of the classroom buildings. The daylight is reflected onto white painted sloping ceilings via an inverted V-shaped opal acrylic deflector transmitting regular even lighting into the rooms. To prevent overheating of the rooms, the skylights are shaded from direct sunlight for ten months of the year. During the two remaining months that are considered winter, sunlight can enter the spaces in order to provide some passive solar heating.

Melbourne, Australia 38°S, 145°E sunny





View from northeast towards classroom.



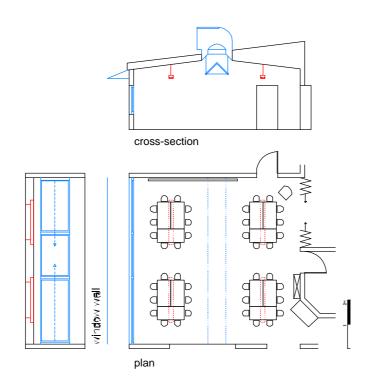
Floorplan and cross-section through selected classroom. Note that direct sun occurs on the North facade in the southern hemisphere.



Interior view when the room is in use.



View of the barrel vault skylights.



building data	
size	
number of stories	1
architect	Taylor Oppenheim Architects Pty Ltd
daylight consultant	K.Poulton & Associates
year of completion	1991
of fice room	
daylight strategy	bilateral, side and toplighting
dimensions (depth/width/height)	. , ,
room area	56 m²
floor	carpet, 13%
wall	paint, 59%
door	paint, 59%
ceiling	paint, 59%
blackboard	coating, 10%
north facing window	single glazing
skylight	double glazing
lamp types	fluorescent lamps
installed power density	10 W/m²

manual on, time clock off

control strategy

